

We claim:

1. A method for detecting a binding factor for a probe, comprising:
 - 5 (a) labeling the probe with a fluorophore;
 - (b) incubating the labeled probe with a factor or a group of factors which may bind the labeled probe to form a binding complex;
 - (c) separating the binding complex and the free probe into different fractions; and
 - 10 (d) subjecting each fraction from step (c) to fluorescence polarization measurement under conditions wherein the binding complex produces a fluorescence pattern different from that of the free probe, thereby allowing detection of the binding complex.
- 15 2. The method of claim 1 wherein the free probe and the complex are separated by using capillary electrophoresis.
3. The method of claim 1 wherein the group of factors comprises a chemical compound library.
- 20 4. The method of claim 4 wherein the chemical compound library is a combinatorial library.
5. The method of claim 1 wherein the group of factors comprises a mixture of natural products.
- 25 6. The method of claim 6 wherein the mixture of natural products comprises a cell lysate.
- 30 7. The method of claim 1 wherein the group of factors comprises nucleic acid.

8. The method of claim 7 wherein the nucleic acid is genomic DNA.
9. The method of claim 8 wherein the probe is capable of binding to modified DNA.
- 5 10. The method of claim 10 wherein the modified DNA is a DNA adduct.
11. The method of claim 1 wherein the probe is selected from the group consisting of protein and nucleic acid.
- 10 12. The method of claim 1 wherein the probe has a molecular weight of less than about 10,000 daltons.
13. The method of claim 1 wherein the probe has a molecular weight of less than about 5,000 daltons.
- 15 14. The method of claim 1 wherein the probe has a molecular weight of less than about 3,000 daltons.
- 20 15. The method of claim 1 further comprising the step of determining binding affinity and/or stoichiometry between the probe and the binding factor.
16. The method of claim 1 wherein the fluorophore is fluorescein.
- 25 17. A method for detecting a nucleic acid damage in a nucleic acid sample, comprising:
(a) incubating the sample with
(i) a polypeptide which is capable of binding the damaged nucleic acid;
and

- (ii) a fluorophore-labeled probe which is capable of forming a complex with the polypeptide to compete with the damaged nucleic acid for the polypeptide; and
- (b) analyzing the incubation mixture under conditions wherein the complex formed between the probe and the polypeptide produces a fluorescence pattern different from that of a free probe.
18. The method of claim 17 wherein the polypeptide is an antibody which is capable of binding damaged DNA.
19. The method of claim 17 wherein the DNA damage is a covalent modification.
20. The method of claim 17 wherein the DNA damage is a benzopyrene addition.
21. The method of claim 17 wherein the DNA sample is genomic DNA.
22. A method for detecting a fluorophore labeled probe, comprising:
- (a) incubating a probe with a fluorophore under conditions which allow labeling of the probe by the fluorophore; and
- (b) subjecting the incubation mixture to fluorescence polarization under conditions wherein the fluorophore labeled probe produces a fluorescence pattern which is different from that of a free probe which is not labeled by the fluorophore.
23. The method of claim 22 further comprising the step of fractionating the incubation mixture.